Feb. 18, 1941. C. F. ROBBINS 2,232,274

INKING APPLIANCE FOR MARKING MACHINES

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Fig. 1.

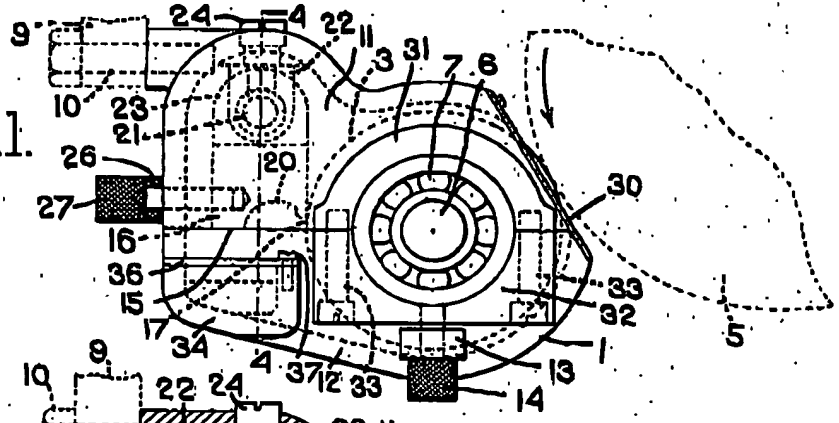

Fig. 2.

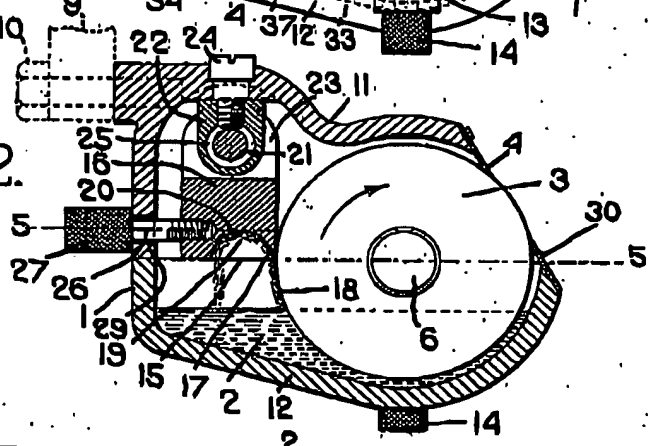

Fig. 3.

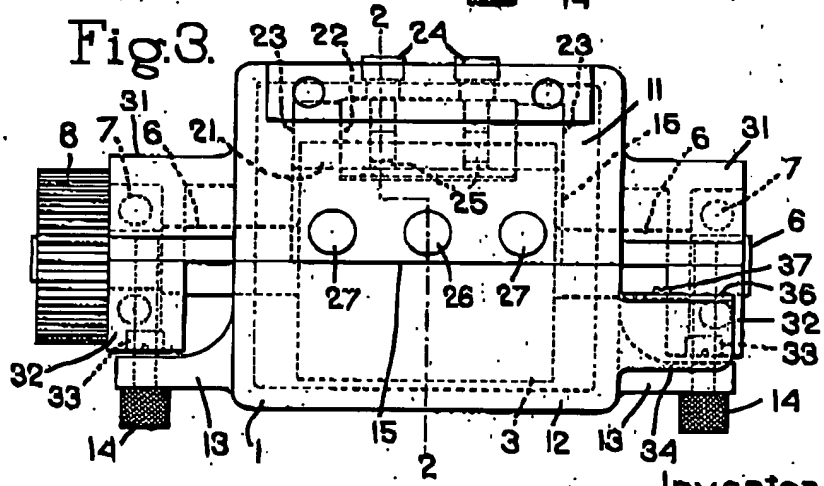

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Fig.4.

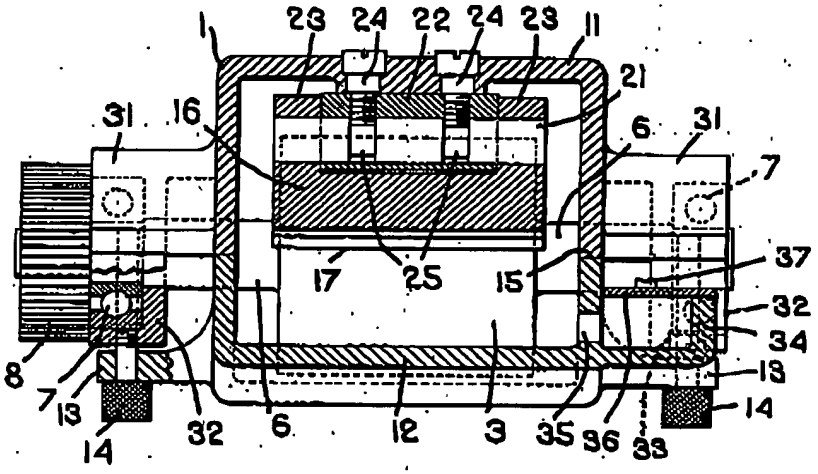
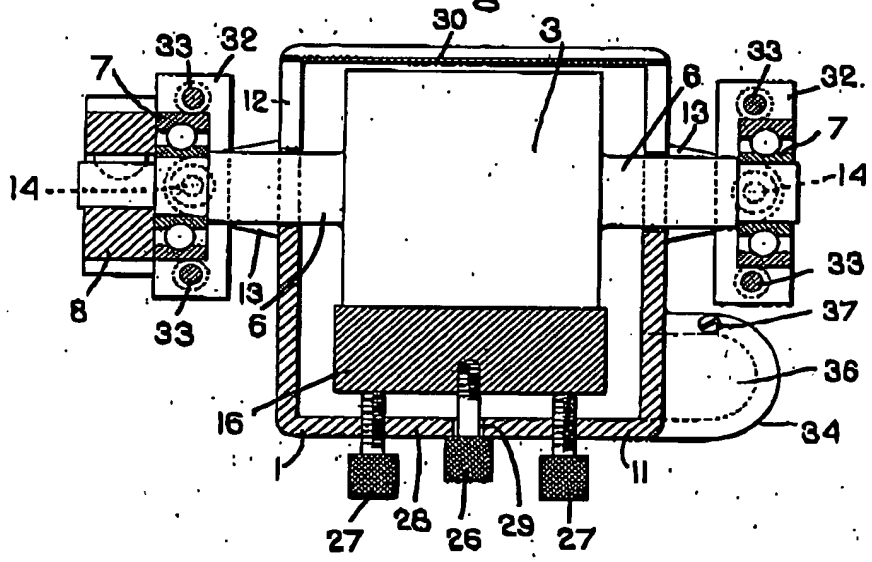


Fig.5.



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Patented Feb. 18, 1941 2,232,274

UNITED STATES PATENT OFFICE

2,232,274

INKING APPLIANCE FOR MARKING MACHINES

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Application December 5, 1939, Serial No. 307,851

5 Claims. (Cl. 101—364)

This invention relates to inking appliances for marking machines of that type which comprises an ink reservoir, and an inking roll rotatably mounted therein and partially submerged in the ink contained in the reservoir, said ink roll projecting sufficiently beyond the ink reservoir so that it can have a rolling contact with the type to be inked or with an intermediate transfer roll by which the ink is transferred to said type. In inking appliances of this type, the inking roll is frequently positively driven so as to have the same surface speed as the moving type member or the rotating transfer roll, and it is common practice to employ a scraper or gauge member which cooperates with said ink roll for determining the thickness of the film of ink which is picked up by said roll and delivered to the transfer roll or type member.

For making printed impressions on some kinds of material, best results are obtained by using a relatively heavy, thick, quick-drying ink having a certain degree of viscosity, and it has been found from experience that the ordinary scraper or gauge member which usually extends radially from the ink roll will not work efficiently with the ink that has these characteristics because the heavy relatively thick ink will tend to clog up the small space between the surface of the ink roll and the active edge of the gauge member, and when this happens, the ink will not be evenly distributed on the ink roll and the latter will not carry a thin film of uniform thickness. Moreover, where a heavy, thick ink is being used, with a radially arranged gauge member, there is frequently considerable friction developed between the ink, the gauge member and the roll which developes heat after the roll has been run for a short length of time, and the heat thus developed often has a deleterious effect on the ink.

It is one of the objects of the invention to provide an improved form of inking appliance which will efficiently handle the heavy thick ink above referred to, without the development of any appreciable heat, and by the use of which the film of ink which is finally applied to the ink roll will be a thin film of uniform thickness.

I secure this end by providing a scraper or gauge member which is constructed to have what might be termed as a "skiving" action on the layer of ink which adheres to the surface of the roll as it rises from the body of ink in the reservoir, such skiving action resulting in shearing or cutting the layer of ink picked up by the roll so as to leave on the surface of the roll a thick film of the required thickness. This skiving or shearing action as distinguished from the scraping action of a radially arranged scraper avoids any crowding of the heavy ink between the operative edge of the gauge member and the roll which would interfere with the deposit on the roll of an ink film of uniform thickness.

In order to give an understanding of the invention, I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

In the drawings:

Fig. 1 is a side view of an inking appliance embodying my invention.

Fig. 2 is a section on the line 2—2, Fig. 3.

Fig. 3 is a view of the appliance looking toward the right, Fig. 1.

Fig. 4 is a section on the line 4—4, Fig. 1.

Fig. 5 is a section on the line 5—5, Fig. 2.

The inking appliance comprises an ink reservoir indicated generally at 1 adapted to hold a body of ink 2 having the characteristics above referred to, that is, a quick-drying ink which is relatively thick and heavy and has more or less viscosity. 3 indicates an ink roll which is rotatably mounted in the reservoir, said roll being partially submerged in the ink 2. The ink reservoir is provided with an opening 4 through which the ink roll 3 projects slightly and the complete marking machine includes a rotating element 5 (see dotted lines, Fig. 1) having a rolling contact with the ink roll 3 and which may be a rotary element carrying the type to be inked, or may be a transfer roll having a rolling contact with the ink roll and which operates to transfer ink from the ink roll to the type member of the marking machine.

In machines of this type, it is customary to provide for rotating the ink roll 3 at the same surface speed as that of the element 5 with which the roll contacts so that there will be no slippage between the contacting surfaces of the ink roll and the element 5 during operation of the machine.

The ink roll 3 is shown as mounted on a shaft 6 which is rotatably mounted in suitable bearings 7, and said shaft has a gear 8 fast thereon which meshes with suitable gearing connected to the rotating element 5 so that the element 5 and the ink roll 3 rotate at the same surface speed.

The ink reservoir is shown as mounted on the frame 9 of the marking machine by means of suitable bolts 10.

In the present construction, the ink reservoir is divided along the line 15 to present an upper

section 11 and a lower section 12. The bearings 7 for the ink roll shaft 6 are mounted in bearing housings carried by the upper section 11. The lower section 12 is arranged to be removably attached to the upper section 11, for which purpose said lower section 12 is provided at each end with an ear 13 which extends underneath the corresponding bearing housing and said ears are detachably secured to the housings by clamping screws 14.

The gauge member which controls the thickness of the film of ink that the inking roll 3 carries as it comes into contact with the member 5 is indicated at 16. This gauge member has a relatively thin cutting edge 17 which has a tangential relation to the peripheral surface of the feed roll 3, and which faces in a direction opposite to the direction of movement of the surface of said feed roll. Means are provided for mounting the gauge member 16 so as to position its cutting edge 17 at the proper distance from the peripheral surface of the roll 3 to produce the ink film on the roll 3 of the desired thickness. The ink roll 3 is rotating in a clockwise direction, Fig. 2, as shown by the arrow, and as the surface of the roll rises from the body of ink 2, a layer of ink of considerable thickness will adhere to the body, as indicated at 18 in Fig. 2. As the roll 3 rotates, the sharp cutting edge 17 which has a tangential relation to the periphery of the ink roll 3 has a sort of skiving action on the ink layer adhering to the roll which has the effect of splitting said layer 18 into a thin film of uniform thickness which passes between the knife edge 17 and the roll and the portion 19 of the ink which is cut or severed from the film by the knife edge 17.

The lower end of the gauge 16 is concavely curved, as shown at 20, and the portion of the ink which is cut off from the layer 18 to produce the thin film on the roll passes into the recess 20 and is directed thereby back into the body of ink 2.

The gauge member 16 is shown as suspended on a pin 21 which is mounted in a supporting block 22 attached to the upper portion of the upper section 11 of the ink reservoir. The gauge member 16 is shown as having two ears 23, one at each end, which ears embrace the supporting block 22, as best seen in Fig. 4. The supporting block 22 is secured to the upper portion of the ink reservoir by two set screws 24 which have screw-threaded engagement with said block 22. These screws also serve to position the pin 21, the latter having two peripheral grooves 25 into which the inner ends of the clamping screws 24 extend. The gauge member 16 is thus pivotally suspended so that it can swing toward and from the ink roll 3.

For adjusting the gauge member 16, I have provided adjusting screws 26, 27. There are two screws 27 which are screw-threaded through the wall 28 of the upper section 11 of the ink reservoir and bear at their inner ends against the outer faces of the gauge member 16, as best seen in Fig. 5. The screw 26 extends loosely through the aperture 29 in the wall 28 and has screw-theraded engagement with the gauge member 16, the head of the screw 26 bearing against the outside face of the wall 28.

By a proper adjustment of these adjusting screws 26, 27, the cutting edge 17 of the gauge member 16 may be adjusted into accurate parallelism with the peripheral surface of the ink roll 3 and may also be adjusted so as to provide a film of ink on the roll 3 of the correct thickness.

The bottom section 11 of the ink reservoir is formed with an open-topped chambered extension 34 which communicates with the interior of the ink reservoir through the opening 35. This open-topped chambered extension 34 provides means for supplying ink to the main reservoir. 36 indicates a cover for the extension 34 which is retained in position by the screw 37. By removing the cover 36, a fresh supply of ink may be poured into the chamber of the extension 34, and this ink will flow through the port 35 into the main ink reservoir.

The ball bearing 7 for the shaft 6 is mounted in a housing comprising the two sections 31, 32. Each section 31 is integral with the upper section 11 of the ink reservoir, and the housing sections 32 are detachably secured to the housing sections 31 by means of screws 33. The attaching screws 14 by which the lower section 12 of the reservoir is retained in position are screw-threaded into the housing 32.

As stated above, the inking appliance herein described is designed especially for use in connection with a marking machine constructed so that the ink roll 3 will be rotated positively, and at the same surface speed as the rotating element 5 to which the ink is to be applied, whether said element 5 be a rotating member carrying type connections to be inked or whether it be a rotating transfer roll adapted to take ink from the ink roll 3 and transfer it to the type characters to be inked.

The improvements above described provide an efficient means for handling thick, quick-drying ink and for applying to the surface of the roll 3 a thin film of ink of uniform thickness.

Moreover, the skiving or shearing action of the knife edge 17 serves to remove surplus ink from the surface of the roll without generating any appreciable heat, and in this respect the device is an important advance over the type of inking appliance that has the gauge in the form of a blade extending radially from the ink roll. If an inking appliance having this radial blade type of gauge is used in connection with thick heavy ink, the friction generated by the heavy ink crowding between the end of the gauge and the surface of the roll frequently develops sufficient heat to deleteriously affect the ink.

While I have illustrated herein a selected embodiment of my invention, I do not wish to be limited to the construction features shown.

I claim:

1. An inking appliance for marking machines comprising an ink reservoir having an opening in one side and adapted to contain ink, an ink roll rotatably mounted in said reservoir and partially submerged in the ink therein, means to rotate the ink roll, a supporting pin mounted within the reservoir and extending parallel to the ink roll, a gauge member located within the reservoir and pivotally suspended from said pin and having a V-shaped knife edge in tangential relation to the ink roll, and means for turning the gauge member on its supporting pin for adjusting the knife edge toward and from the ink roll.

2. An inking appliance for marking machines comprising an ink reservoir having an opening in one side and adapted to contain ink, an ink roll rotatably mounted in said reservoir and partially submerged in the ink therein, means to rotate the ink roll, a supporting block within the reservoir, a pin carried by said block and extend-

ing parallel to the ink roll, a gauge member located within the reservoir and suspended from said pin and having a V-shaped edge in tangential relation to said roll, and adjusting screws for turning the gauge member on its pin, thereby to adjust the V-shaped edge toward and from the ink roll.

3. An inking appliance for marking machines comprising an ink reservoir having an opening in one side and adapted to contain ink, an ink roll rotatably mounted in said ink reservoir and partially submerged in the ink therein, means to rotate the ink roll, a supporting pin situated within the reservoir, a gauge member pivotally located within the reservoir and suspended from said pin, said gauge member being formed on its lower face with a V-shaped edge having tangential relation to said roll and with a concavely curved recess adjacent said edge, and means to turn the gauge member on the pin for adjusting the V-shaped edge thereof toward and from the ink roll, the concave surface of the recess serving to deflect surplus ink back into the reservoir.

4. An inking appliance for marking machines comprising an ink reservoir having an opening in one side and adapted to contain ink, an ink roll rotatably mounted in said reservoir and partially submerged in the ink therein, means to rotate the ink roll, a supporting block within the reservoir at a higher level than said ink roll, a pin carried by said block and extending parallel to the ink roll, said pin having peripheral grooves, attaching screws for attaching the block to the reservoir, the end of the screws engaging in the grooves of the pin and thus holding the latter from endwise movement, and a gauge member located within the reservoir and suspended from said pin and having a V-shaped edge in tangential relation with the ink roll.

5. An inking appliance for marking machines comprising an ink reservoir having an opening in one side and adapted to contain ink, an ink roll rotatably mounted in said reservoir and partially submerged in the ink therein, means to rotate the ink roll, a supporting block within the reservoir at a higher level than said ink roll, a pin carried by said block and extending parallel to the ink roll, said pin having peripheral grooves, attaching screws for attaching the block to the reservoir, the end of the screws engaging in the grooves of the pin and thus holding the latter from endwise movement, a gauge member located within the reservoir and suspended from said pin and having a V-shaped edge in tangential relation with the ink roll, and means for turning the gauge member on said pin, thereby to adjust the V-shaped edge toward and from the ink roll.

CHARLES F. ROBBINS.